JURISDICTIONAL DELINEATION
for the
Hillside Mine Lower Tailings Pile Reclamation Project
Near Bagdad, Yavapai County, Arizona

Prepared for:
Arizona Department of Administration

Prepared by:

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1.0 INTRODUCTION

Hillside Mine History

Prospectors located minerals and staked claims in the Bagdad area in the early 1880s and established the Eureka Mining District. John Lawler and B.T. Riggs developed the Hillside Mine and shipped the first ore from the district in 1887. The mine operated intermittently until 1951, with custom milling of stockpiled ore and ore from other local mines continuing until approximately 1956.

The core of the Hillside Mine included six claims (Hillside, Seven Stars, Happy Jack, Camp, Contact #1, Contact #2), which were patented in February 1892. Mining activity extended onto federal land administered by the Bureau of Land Management (BLM) and State Trust land transferred from public domain to the state in a land exchange in 1987.

Pollutants are leaching from three tailings piles at the inactive mine into Boulder Creek. BLM has closed the Upper Tailings Pile, which is on federal land. The Middle Tailings Pile is located on private land owned by Bagdad Hillside LLC. The Arizona Department of Administration (ADOA), in cooperation with the Arizona Department of Environmental Quality (ADEQ) and Arizona State Land Department (ASLD), is working to perform reclamation to the Lower Tailings Pile, which is located on State Trust land. ADOA is proposing to construct soil cover, drainage controls, and other reclamation features to mitigate the effects of the Lower Tailings Pile on water quality observed in Boulder Creek.

Project Components

The Lower Tailings Pile is situated in a narrow canyon surrounded by very rugged terrain. The tailings appear to have been deposited by a flume that is no longer extant and there is no evidence of a road ever having been built south from the main mine workings to the lower tailings. Developing access for heavy equipment to reach the lower tailings is a major challenge for the proposed reclamation project. The general design features or components of the lower tailings pile reclamation plan include:

- improving an existing road and developing a spur road to provide access to the lower tailings pile,
- grading the outer bank of the lower tailings pile,
- grading the surface of the lower tailings pile to shed storm water,
- placing soil cover over the re-graded tailing surface using colluvium on the hillside adjacent to the east side of the lower tailings pile,

- armoring the outer edge of the lower tailings pile with boulders dredged from the adjoining Boulder Creek to buttress and protect the pile from erosion during flood events,
- constructing a channel to divert storm water from the lower tailings pile and adjacent hillside, and
- revegetating the soil cover and borrow source area.

1.1 PROJECT LOCATION AND DESCRIPTION

1.1.1 Study Area

The Preliminary Jurisdictional Delineation (PJD) survey area occurs around Boulder Creek in west-central Yavapai County, Arizona. The Lower Tailings Pile at the inactive Hillside Mine is adjacent to the east side of Boulder Creek in the Eureka (Bagdad) mining district approximately four miles (6.5 km) northwest of Bagdad, Arizona (**Figure 1**). The reclamation of the lower tailings pile would disturb State Trust land in the SE1/4 NE1/4 and NE1/4 SE1/4 Section 20, Township 15 North, Range 9 (**Figure 2**).

The borrow area for material that will be used to cap the tailings pile is east and up slope of the existing tailings pile (**Figure 3**). The borrow area for riprap materials to armor the tailings pile will come from cobble materials along and within Boulder Creek and adjacent to the tailings pile. The existing road which requires improvements to access the tailings pile is also located on State Trust land in the E1/2 of Section 21. A new spur road from the east mesa down the mesa slope towards Boulder Creek would cross State Trust land and land owned by Bagdad Hillside LLC in that same section. The project area is mapped on the 1986 Bagdad and Bozarth Mesa, Arizona, U.S. Geological Survey 7.5-minute topographic quadrangles.

1.1.2 Topography

The project is located in rugged terrain at the southern margin of the Mountain Transition zone that angles across Arizona, dividing the Basin and Range physiographic province to the southwest from the Colorado Plateau to the northeast. Elevations in the project area range from approximately 2,900 feet (ft) [884 meters (m)] above mean sea level (amsl) at Boulder Creek to 3,900 feet (1,189 (m) amsl on the mesa to the east. To the north, Bozarth Mesa and Behm Mesa transition to the uplands of the Santa Maria and Mohon mountains, which rise to almost 7,500 feet (2,900 m) amsl approximately 22 miles (37 km) north of the project area.

The geology of the project vicinity is complex, and includes early and middle Proterozoic metavolcanic rocks with a small area of early Proterozoic metamorphic rocks (Richard *et al.* 2000). More detailed geological mapping identified basalt flows and land slide blocks,

conglomerate and rhyolitic tuff interbedded with conglomerate, Butte Falls tuff, and quartz monzonite (Anderson *et al.*1955).

1.1.3 Climate

The climate of the area is transitional between the deserts to the south and west and the highlands to the north and east (Sellers and Hill 1974). The daily mean minimum and maximum temperature at Bagdad in January is 32 degrees Fahrenheit (°F) zero degrees Celsius (°C) and 58 °F (14 °C), respectively. Mean daily maximum temperature during July is 97 °F (36 °C) and nights cool to an average of about 69 degrees Fahrenheit (21 °C). The annual growing season is long, and freezing temperatures usually do not occur before the second week in December or after the last week of February. Average annual rainfall is about 14 inches (36 cm). Precipitation is bi-seasonal, with severe, localized thunderstorms during the late summer months, and gentler, broader storm fronts passing through the area during the winter, with an average of almost 3 inches (8 cm) of snowfall, which soon melts.

1.1.4 Soil Survey

Soils in the area are classified as Backerville extremely rock sandy loam with 20 to 60 percent slopes, Cabezon-Springerville complex with 5 to 25 percent slopes, and rockland (Natural Resources Conservation Service 2016).

1.1.5 Vegetation

The project area is in an ecotone with biota characteristic of Semi-Desert Grassland, Interior Chaparral and Arizona Upland subdivision of Sonoran Desertscrub biotic communities (Brown 1994). Vegetation is generally sparse, leaving at least 50% percent of ground surface visible in most areas. Vegetation in the project area is typical of the Arizona Upland subdivision of Sonoran Desertscrub biotic community.

Dominant upland plant species in the project area include: oneseed juniper (*Juniperus monosperma*), ocotillo (*Fouquieria splendens*), beavertail pricklypear (*Opuntia basilaris*), buckhorn cholla (*Cylindropuntia acanthocarpa*), mountain mahogany (*Cercoparpus* sp.), goldenflower century plant (*Agave chrysantha*), crucifixion thorn (*Canotia holacantha*), common sotol (*Dasylirion wheeleri*), brittlebush (*Encelia farinosa*), and Sonoran scrub-oak (*Quercus turbinella*).

Much like the upland vegetation found within the project area, riparian vegetation along Boulder Creek consists primarily of Sonoran Riparian Scrubland, but also includes elements of Sonoran Riparian Deciduous Forest and Woodlands. Plants in the vegetative community found within this

portion of project area included: Arizona sycamore (*Platanus wrightii*), Fremont cottonwood (*Populus fremontii*), Goodding's willow (*Salix gooddingii*), yellow paloverde (*Parkinsonia microphylla*), cattail, (*Typha* sp.) and the invasive species tamarisk (*Tamarix* sp.). Within the project limits near Boulder Creek, vegetation is sparse and is contained within 10 feet of the creek (**see Appendix A**).

1.1.6 Land Use

The land within the project limits include historic mine uses (tailings pile). The majority of the land within the project vicinity includes mountainous terrain and native vegetative communities. The land is primarily undisturbed and is located on grazing allotments within ASLD-administered land. However, use of the area by livestock appears to be non-existent. The small mining town of Bagdad is located approximately four miles south of the project area.

1.1.7 Hydrology characteristics

The project is located within the Bill Williams River watershed. Boulder Creek (HUC # 15030202) is classified as having interrupted perennial and intermittent stream segments (U.S. Environmental Protection Agency 2004). Occasional springs are another source of surface water within Boulder Creek. The U.S Environmental Protection Agency (USEPA) classifies Boulder Creek as Stream Order 4 and approximately 37 miles (60 km) in length.[1]

Within the project limits, Boulder Creek contains an interrupted permanent pool that appears to persist year-round (GoogleEarth 2016: USGS 1986) (**Appendices A and E**). Boulder Creek drains into Burro Creek about 6 linear miles (10 km) southwest of the project limits, and Burro Creek drains into the Big Sandy River, which joins with the Santa Maria River to form the Bill Williams River before flowing into the Colorado River. The ADEQ maintains the 303(d) List and Other Impaired Waters information for the USEPA. Currently, Boulder Creek is listed as impaired waters for arsenic, beryllium, copper, manganese, zinc, and low pH (USEPA 2016: ADEQ 2016).

1.1.8 Floodplains

The Federal Emergency Management Agency (FEMA) indicates that the Hillside Lower Tailings Pile and Boulder Creek are encompassed by Flood Insurance Rate Map (FIRM) Panel 04025C1550G.

[1] (https://ofmpub.epa.gov/waters10/watershed_characterization.control?pComID=21396849).

1.1.9 National Wetlands Inventory

A review of the National Wetlands Inventory map (**see Appendix D)** did not indicate the presence of wetlands or water bodies within the project site (USFWS 2016).

2.0 METHODS

The jurisdictional delineation methods described below are consistent with U.S. Army Corps of Engineers (Corps) guidance from the following sources:

- *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Lichvar and McColley 2008),
- *Jurisdictional Determination Form Instructional Guidebook* (Corps 2007),
- *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Corps 2008), and
- *Wetland Delineation Manual* (Environmental Laboratory 1987).

The methods used in this jurisdictional determination are for identifying the OHWM in low-gradient, alluvial ephemeral drainages in the Arid West for use in delineating the limits of non-wetland Waters. The following resources were reviewed: National Wetland Inventory Wetlands Mapper (USFWS 2016); U.S. Geological Survey (USGS) Hydrologic Atlas (USGS 2016); FEMA Flood Insurance Rate Maps (FEMA 2016); Natural Resources Conservation Service (NRCS) Web Soil Survey (NRCS 2016).

Field work for the jurisdictional delineation was conducted on March 10, 2016, by AECOM staff Jean Paul Charpentier and Tom Silvia. Approximately 5.8 acres of the project area were surveyed on foot. The width of all potential jurisdictional non-wetland drainages in the project area was measured, indicators of the OHWM (physical characteristics) were identified, and ground photographs were taken. Three data points along Boulder Creek were identified and labeled using numeric names (i.e., 1, 2, 3, etc.). The OHWM was determined by considering the following physical drainage characteristics (see **Table 1**, Drainage Summary Table).

- Vegetation characteristics of the drainage
- Vegetation characteristics of the areas surrounding the drainage
- Change(s) in soil characteristics
- Impression(s) of water line on streambanks
- Shelving or cut streambanks
- Presence of vegetation litter/debris
- Sediment and mineral deposits
- Sand or gravel deposits
- Exposed roots

Ground-level digital photographs were taken along Boulder Creek to document the physical conditions of the OHWM (**Appendix A, Ground Photographs**). An adjustable measuring rod marked in 1-foot increments was included in each photograph to indicate the width of the drainage. Global positioning system (GPS) coordinates were recorded for each photograph. The GPS data were plotted on an aerial photograph base map ESRI ArcGIS version 9.2 software, with a scale of one inch equal to 200 feet.

The area calculations are based on the drainage width. The area for that drainage was calculated from its observed width and the corresponding length of the drainage at that width.

3.0 RESULTS

3.1 WATERS OF THE U.S.

A total of one drainage feature (Boulder Creek) was identified as potential Waters of the U.S. within the study area for a total of 1.8 acres and 2,285 linear feet. Drainage characteristics data from several survey locations along Boulder Creek within project limits is summarized in **Table 1** Drainage Summary. **Table 2** provides the Corps Water Data Sheet.

Every feature within the study area capable of containing overland surface flow was evaluated and identified. However, if a feature did not generate sufficient flow to scour, sort sediment, and deposit debris thereby creating a channel with bed and banks it was considered an erosional feature and was not included in this preliminary delineation as a potential Waters of the U.S.

Location information and additional detail for each data point is provided on the Preliminary Jurisdictional Determination Form (RGL 08-02 form) (**Appendix B**). The areas determined to meet the criteria for potential Waters of the U.S. are delineated at a scale of 1" = 200' on the attached aerial photograph with red lines and yellow hatching (**Appendix C**). The Project corridor boundary is defined by a black line. Each data point on the map provided in **Appendix C** includes a corresponding photo in **Appendix A**.

Wetland Determination

Visual inspection of the drainages in the PJD survey area identified obligate wetland species (cattail) within the riverine environment. Test pits did not identify soils characteristic of wetland soils. Wetlands were not identified within the PJD survey area and the proposed activity would have no effects to wetlands.

4.0 REFERENCES

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TABLES

Table 1 Drainage Summary

WashNo Name	Data Point ID	Field Date	WOUS	Wash Width (ft)	Area (acres)	Vegetation Difference Between Wash Upland	Change in Soil Characteristics	Waterline Mark on Bank	Water Stains	Shelving or Cut Banks	Exposed Roots	Sediment Deposits	Presence of Litter or Debris	Ground Photo Number	Other_Notes
Boulder Creek	1	3/10/2016	Yes	40		Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	1,2	surface water flowing
Boulder Creek	2	3/10/2016	Yes	30		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	3,4	interrupted permanent pool
Boulder Creek	3	3/10/2016	Yes	30	combined = 1.8	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	5,6	surface water flowing

Waters_Name	Cowadin_Code	HGM_Code	Area (acres)	Linear (ft)	Waters Types	Latitude	Longitude	Local_Waterway
Boulder Creek	R4SB3	RIVERINE	1.8	2,285	NRPW	34°37'43.77" N	113°12'58.56" W	Bill Williams River

FIGURES

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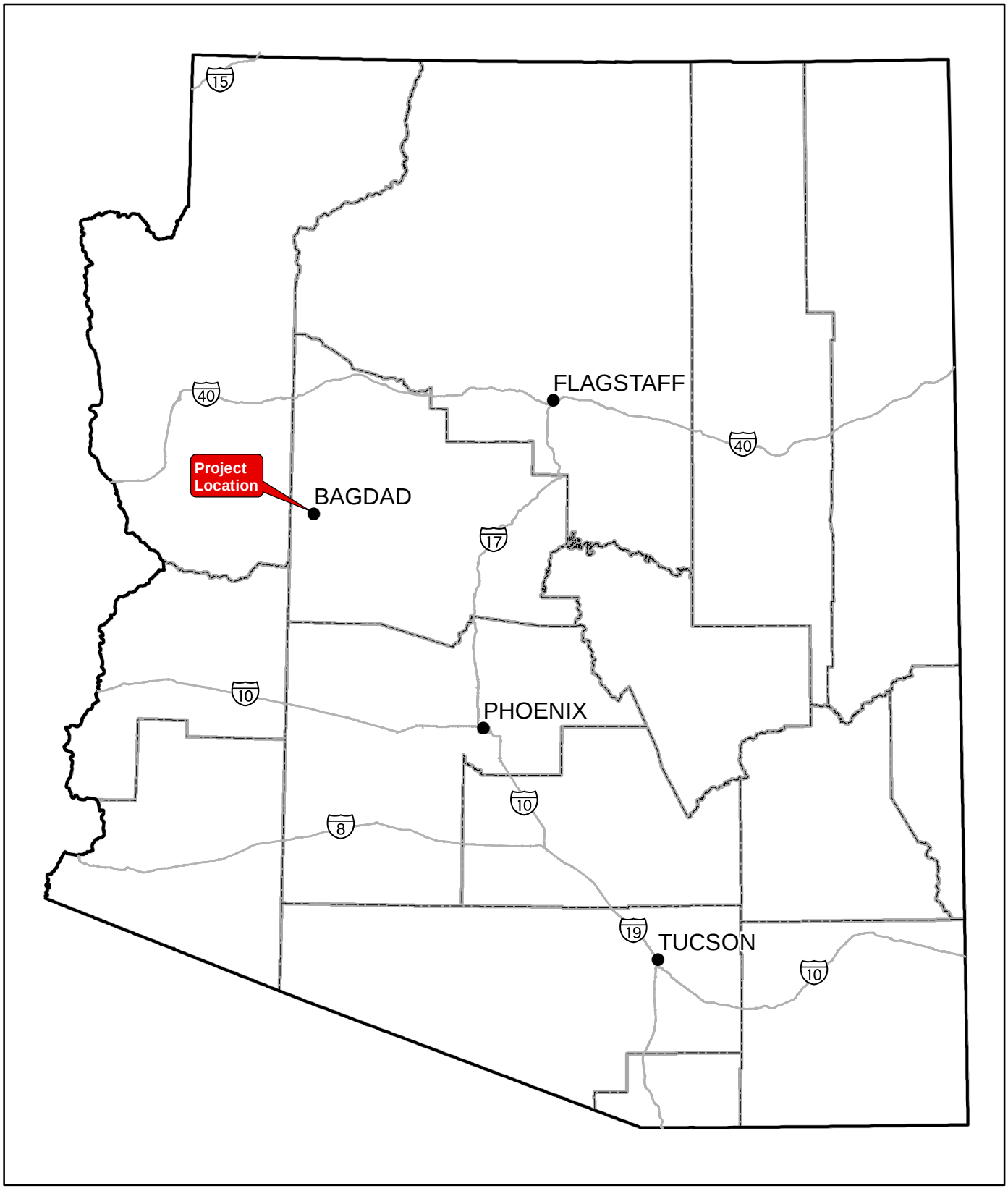


Legend

- City
- Interstate
- County Boundary
- State Boundary

N

0 40 80

Miles

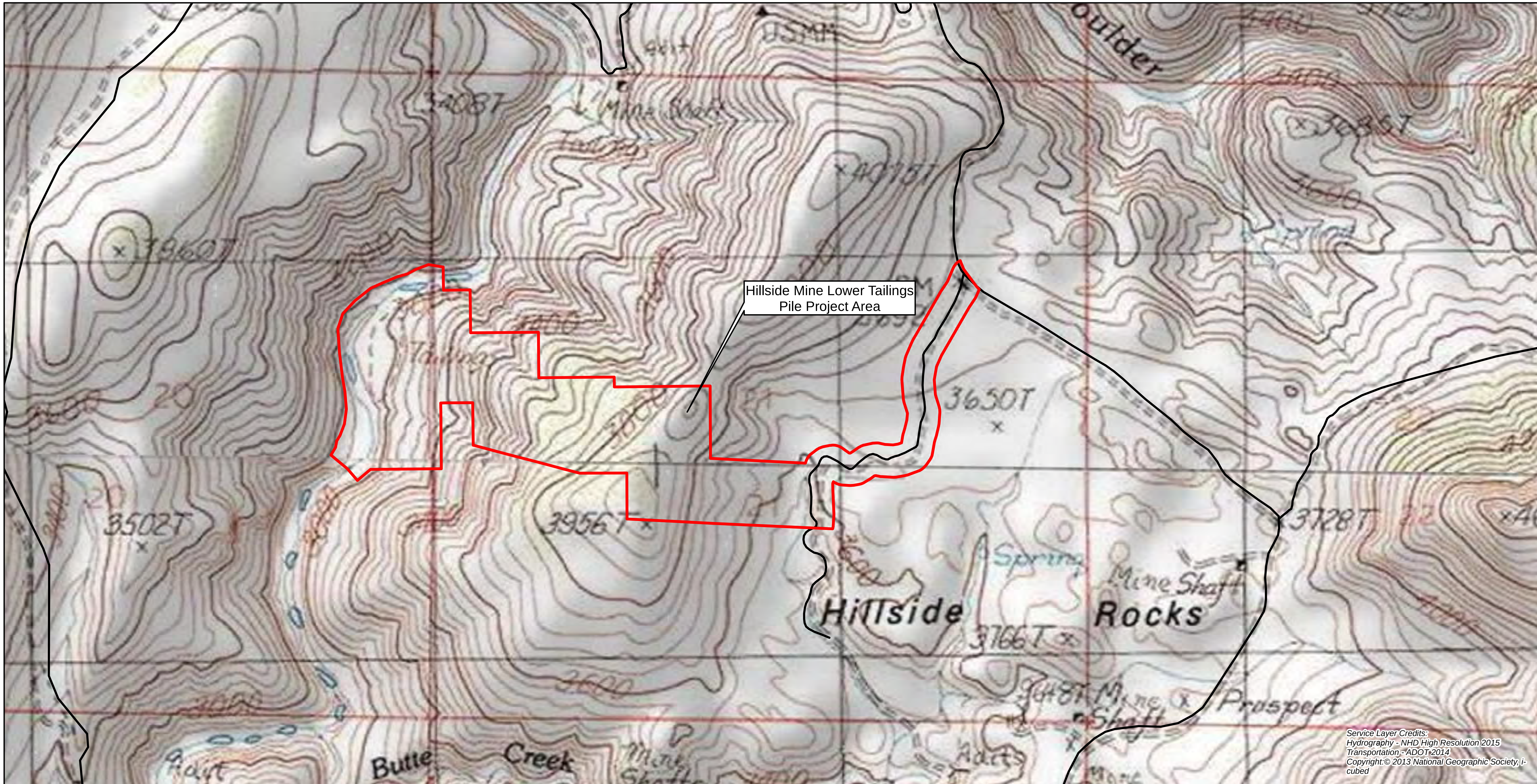
Source:
Roads: ADOT 2014
Base Features: ALRIS 2014

Figure 1

Location Map

Arizona Department of Administration
Town of Bagdad, Arizona
Preliminary Jurisdictional Report

P:\Projects\ADOA\23446693_ADOA_Hillside_LTP_Feas_Lvl_Design\GIS\mxds\Reports\JD\Fig2_JD_Vicinity.mxd (rl 4/26/2016)



Legend

- Town of Bagdad
- Project Area
- Existing Road
- Intermittent or Ephemeral Streams

N

0 800 1,600 Feet

1 inch = 800 feet

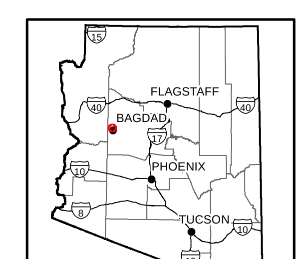


Figure 2
Project Vicinity
Hillside Mine Lower Tailings Pile Reclamation Project
Bagdad, Arizona

AECOM

P:\Projects\ADOA\23446693_ADOA_Hillside_LTP_Feas_Lvl_Design\GIS\mxds\Reports\JDFig3_JD_ProjectArea.mxd (1 4/26/2016)

Source:
Hydrography - NHD 2015
Imagery - GPSI 8 August, 2014

Legend

- Project Area Boundary
- Cover Borrow Area
- Riprap Borrow Area
- Existing Road

N

0 400 800 Feet

1 inch = 400 feet
When printed at 11" x 17"

Figure 3
Project Area
Hillside Mine Lower Tailings
Pile Reclamation Project
Bagdad, Arizona

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APPENDIX A

GROUND PHOTOGRAPHS

Wash ID: Boulder Creek **Data Pt.:** 1 **Photo No.:** 1 **Direction:** Upstream **Date:** 3/10/16	

Wash ID: Boulder Creek **Data Pt.:** 1 **Photo No.:** 2 **Direction:** Downstream **Date:** 3/10/16	

Wash ID: Boulder Creek **Data Pt.:** 2 **Photo No.:** 3 **Direction:** Upstream **Date:** 3/10/16	

Wash ID: Boulder Creek **Data Pt.:** 2 **Photo No.:** 4 **Direction:** Downstream **Date:** 3/10/16	

Wash ID: Boulder Creek **Data Pt.:** 3 **Photo No.:** 5 **Direction:** Upstream **Date:** 3/10/16	

Wash ID: Boulder Creek **Data Pt.:** 3 **Photo No.:** 6 **Direction:** Downstream **Date:** 3/10/16	

Wash ID: Boulder Creek **Data Pt.:** 4 **Photo No.:** 7 **Description:** Lower Tailings Pile edge adjacent to Boulder Creek facing south, downstream and data point 3 **Date:** 3/10/16	

Wash ID: Boulder Creek **Data Pt.:** 5 **Photo No.:** 8 **Description:** Lower Tailings Pile edge adjacent to Boulder Creek facing northwest and data point 2 **Date:** 3/10/16	

Wash ID: Boulder Creek **Data Pt.:** 2 **Photo No.:** 9 **Direction / Description:** Upstream facing northwest / showing pool depth **Date:** 3/10/16	

APPENDIX B

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

This preliminary JD finds that there "*may be*" waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

District Office: Los Angeles District | File/ORM #: | PJD Date: 5/16/2016

State: AZ | City/County: Yavapai

Nearest Waterbody: Bill Williams River

Location: SE1/4 NE1/4 and NE1/4 SE1/4 Section 20, Township 15 North, Range 9
LatLong or UTM: 34°37'43.77" N, 113°12'58.56" W

Name/Address of Person Requesting PJD:
ADOA Point of Contact Needed for submittal to Corps

Identify (Estimate) Amount of Waters in the Review Area:
Non-Wetland Waters: 2,285 linear ft., 1.8 acres | Stream Flow: Intermittent

Wetlands: 0.00 acre(s) | Cowardin Class: N/A

Name of Any Water Bodies on the Site Identified as Section 10 Waters: | Tidal: | Non-Tidal:

☐ Office (Desk) Determination
☒ Field Determination: Date of Field Trip: 3/10/2016

SUPPORTING DATA: Data reviewed for Preliminary JD (check all that apply – checked items should be included in case file and, where checked and requested, appropriately reference sources below):

- ☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:
- ☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  - ☐ Office concurs with data sheets/delineation report.
  - ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps.
- ☐ Corps navigable waters' study:
- ☒ U.S. Geological Survey Hydrologic Atlas:
  - ☐ USGS NHD data.
  - ☒ USGS 8 and 12 digit HUC maps. HUC # 15030202
- ☒ U.S. Geological Survey map(s). Cite quad name: 1986 Bagdad and Bozarth Mesa, Arizona, U.S. Geological Survey 7.5-minute topographic quadrangles.
- ☒ USDA Natural Resources Conservation Service Soil Survey. Citation: Web Soil Survey. Accessed April 13, 2016 at http://websoilsurvey.nrcs.usda.gov/app/
- ☒ National wetlands inventory map(s). Cite name: National Wetland Inventory Wetlands Mapper. Accessed March 22, 2016 at http://www.fws.gov/wetlands/Data/Mapper.html/
- ☐ State/Local wetland inventory map(s):
- ☒ FEMA/FIRM maps: FIRM Panel 04025C1550G
- ☐ 100-year Floodplain Elevation is:
- ☒ Photographs:
  - ☒ Aerial (Name & Date): Base Map Imagery – Geospatial Professional Solutions, Inc. (GPSI) 8 August, 2014
  - ☒ Other (Name & Date): Ground Photographs March 10, 2016
- ☐ Previous determination(s). File no. and date of response letter:
- ☐ Other information (please specify):

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Signature and Date of Regulatory Project Manager (REQUIRED)

Signature and Date of Person Requesting Preliminary JD (REQUIRED, unless obtaining the signature is impracticable)

EXPLANATION OF PRELIMINARY AND APPROVED JURISDICTIONAL DETERMINATIONS:

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "preconstruction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

This preliminary JD finds that there "*may be*" waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

Appendix A – Site

District Office: Los Angeles District | File/ORM #: | PJD Date: 5/16/2016

State: AZ | City/County: Maricopa | Person Requesting PJD: ADOA Contact here

Site Number	Latitude	Longitude	Cowardin Class	Est. Amount of Aquatic Resource in Review Area	Class of Aquatic Resource
1	34°37'43.77" N	113°12'58.56" W	Riverine	1.8 acres	NRPW-Section 10 non-tidal

APPENDIX C

PRELIMINARY JURISDICTIONAL DELINEATION

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Legend

- Project Area Boundary
- Waters of the U.S.
- Ordinary High Water Mark
- Cover Borrow Area
- Riprap Borrow Area

N

0 200 400 Feet

1 inch = 200 feet

Appendix C
Preliminary Jurisdictional Delineation
Hillside Mine Lower Tailings Pile Reclamation Project
Bagdad, Arizona

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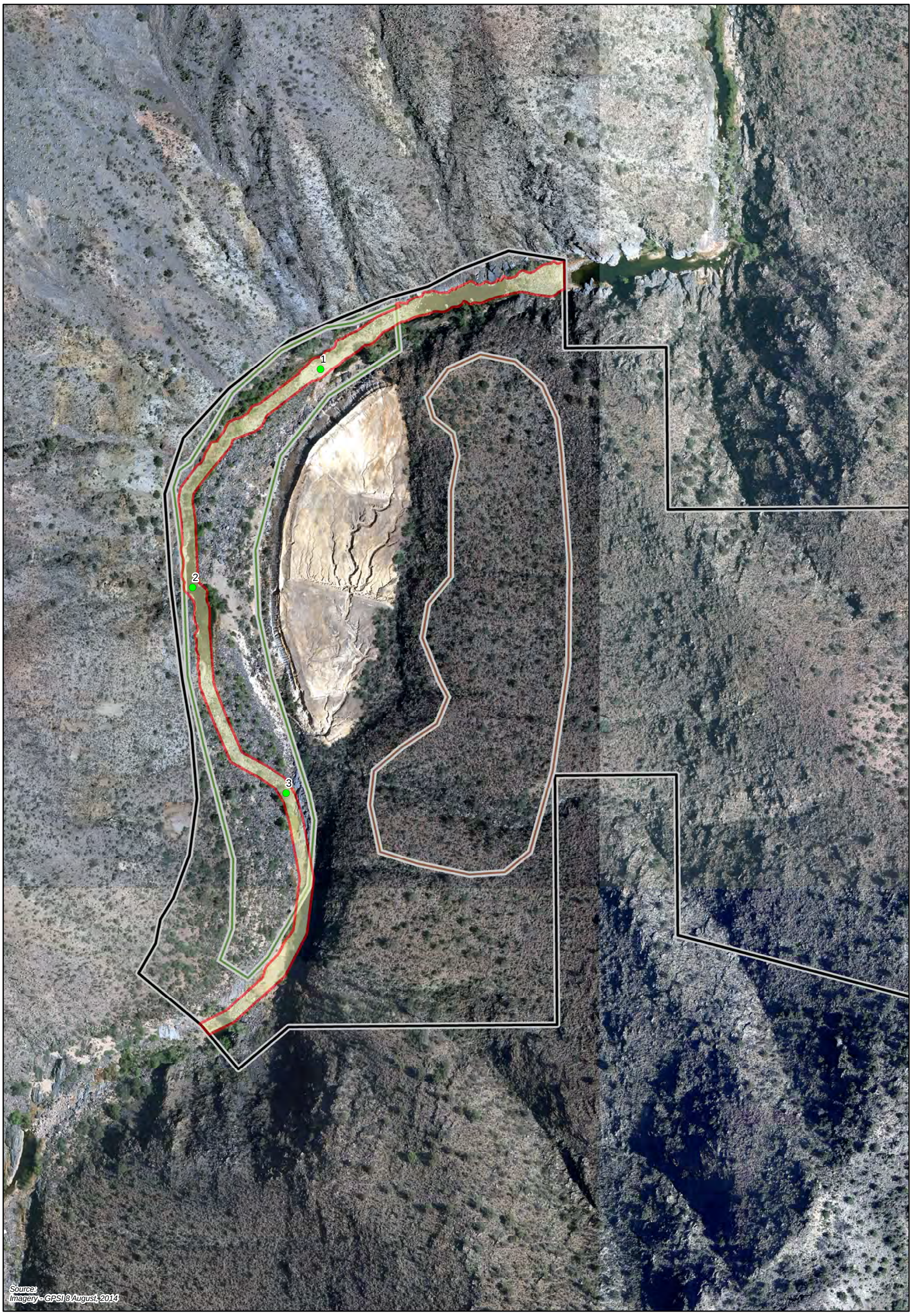
P:\Projects\ADOA\23446693_ADOA_Hillside_LTP_Feas_Lvl_Design\GIS\mxds\Reports\JD\AppC2_JD_FieldDataPoints.mxd (rl)



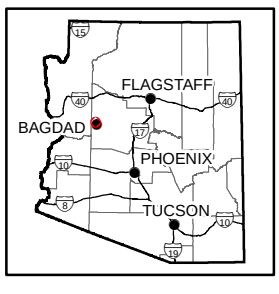
Legend

- Project Area Boundary
- Waters of the U.S.
- Ordinary High Water Mark
- Cover Borrow Area
- Riprap Borrow Area
- Field Data Point

N

0 200 400 Feet

1 inch = 200 feet



Appendix C2
Field Data Point Map
Hillside Mine Lower Tailings
Pile Reclamation Project
Bagdad, Arizona

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APPENDIX D

USFWS WETLAND MAPPER

U.S. Fish and Wildlife Service

National Wetlands Inventory

Hillside Mine
Lower Site

Mar 22, 2016

Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

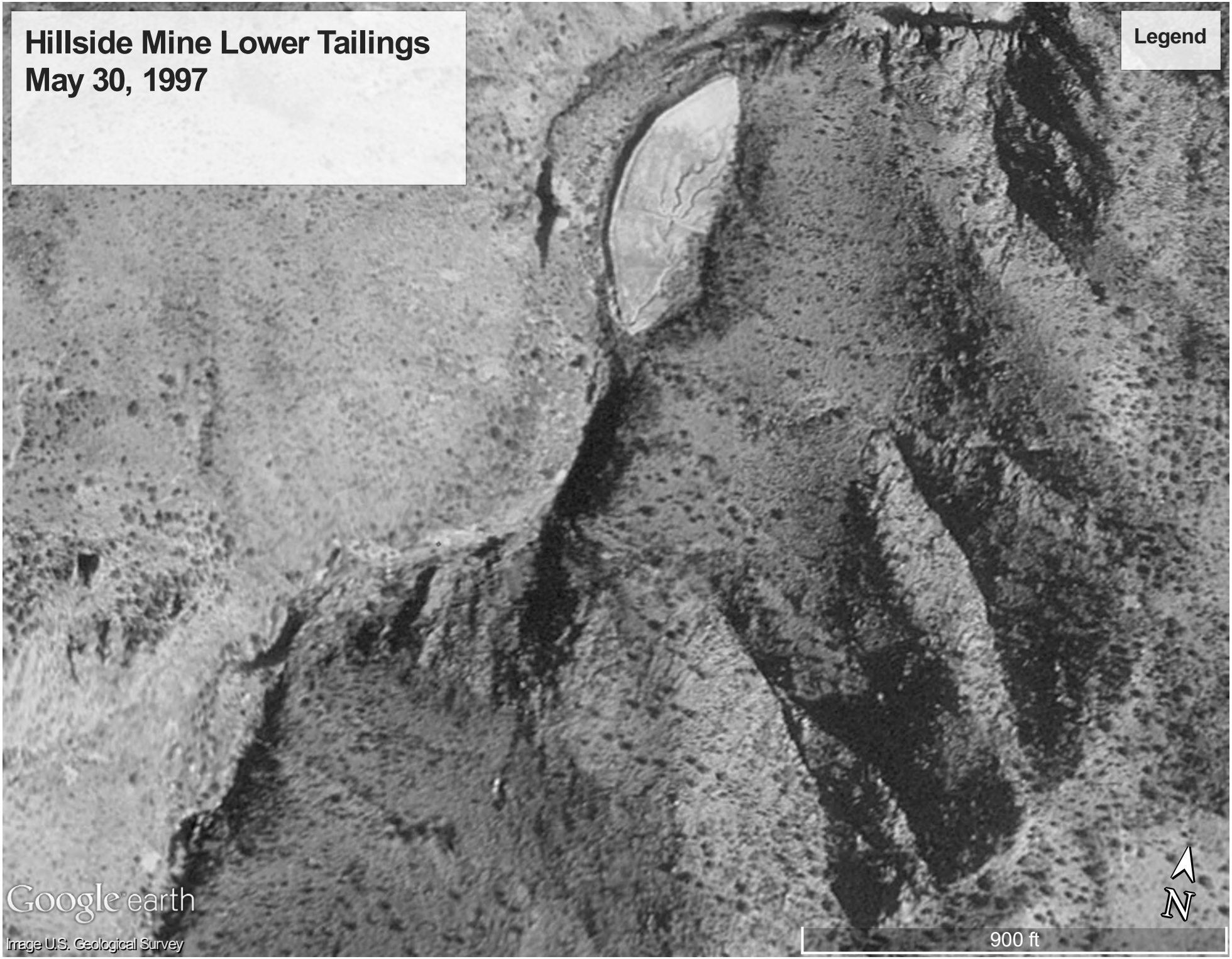
This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

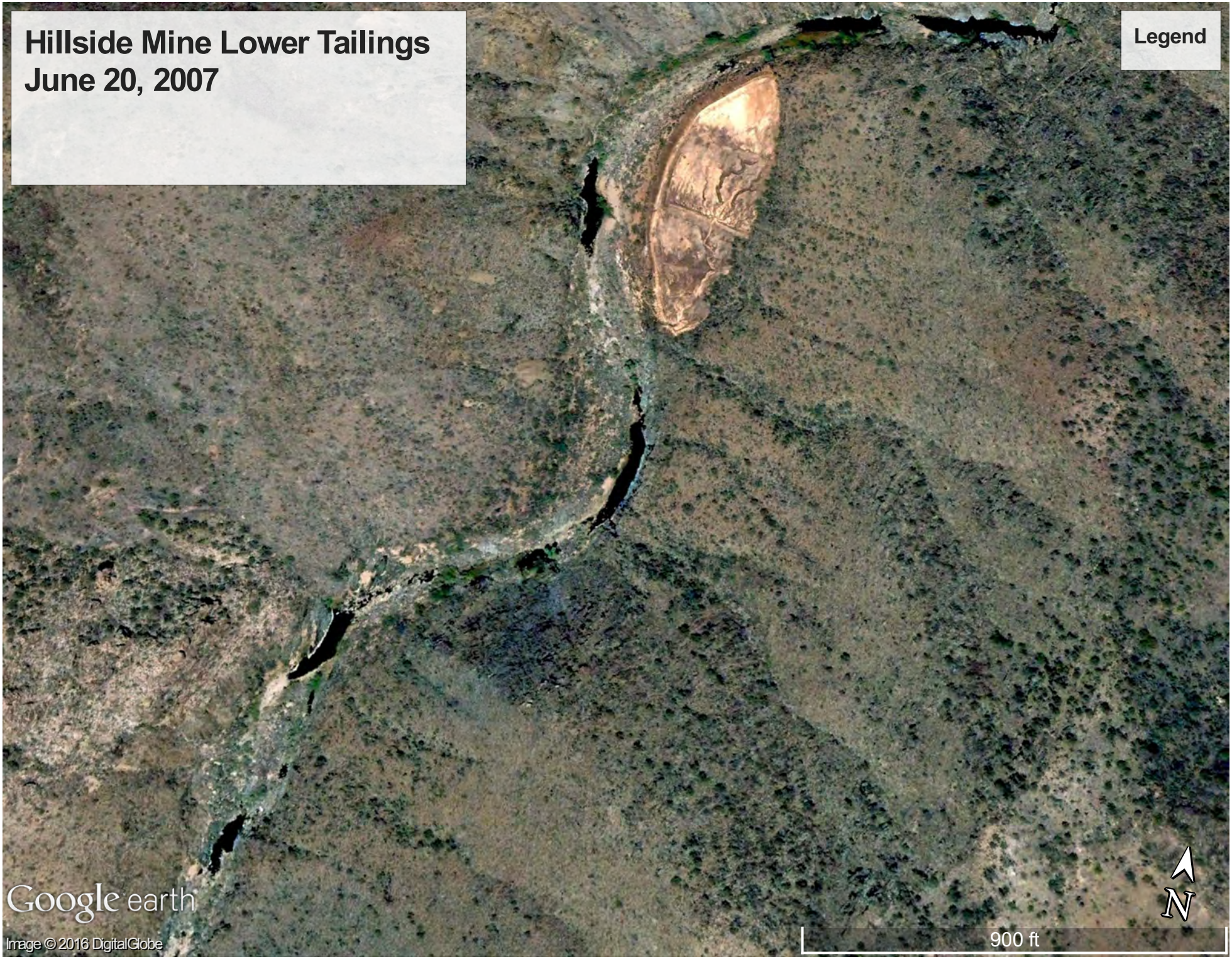
User Remarks:

APPENDIX E

HISTORIC IMAGERY OF BOULDER CREEK

WITHIN PROJECT LIMITS


Hillside Mine Lower Tailings
May 30, 1997
Legend
Google earth
Image U.S. Geological Survey
900 ft
N


Hillside Mine Lower Tailings
June 20, 2007
Legend
Google earth
Image © 2016 DigitalGlobe
N
900 ft


Hillside Mine Lower Tailings
September 9, 2010
Legend
Google earth
Image USDA Farm Service Agency
N
900 ft


Hillside Mine Lower Tailings
June 24, 2011
Legend
Google earth
900 ft
N


Hillside Mine Lower Tailings
November 2, 2013
Legend
Google earth
900 ft
N